ANALYSIS OF VALIDITY OF EMISSION REDUCTIONS AS ERC

AIR PERMITS DIVISION
LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

ADDIS PLANT
DSM COPOLYMER
ADDIS, WEST BATON ROUGE PARISH, LOUISIANA
AI NO. 2519
ACTIVITY NO. PER20040001

Background

DSM Copolymer operated a synthetic rubber manufacturing plant located one mile south of Addis in West Baton Rouge Parish, Louisiana. The Addis Plant produced both solid and liquid polymers. Boiler No. 1 (EIQ No. 45-83) was one of three boilers that generated process steam for the Addis Plant. Boiler No. 1 was shut down on October 11, 2003. Boiler No. 1 was operating under Permit 3120-00004-03, issued July 10, 1997, when it ceased operation. Subsequently, the entire plant was shut down in January 2005 and dismantled.

Boiler No. 1 was a natural gas-fired steam boiler with a maximum rating of 119 MM BTU/hr. The boiler was constructed prior to 1984 and was not subject to any federal or state regulations for emissions of the air pollutants NO_X and VOC.

The shutdown of Boiler No.1 resulted in reductions of both NO_X and VOC.

Summary

A portion of the resultant NO_X and VOC emission decrease associated with shutdown of Boiler No. 1 is surplus, permanent, quantifiable, and enforceable in accordance with LAC 33:III.Chapter 6-Regulations on Control of Emissions Through the Use of Emission Reduction Credits Banking. Accordingly, these reductions qualify as Emissions Reduction Credits (ERC). Amounts in the following table are given in tons per year (TPY).

Total NO_X ERC:

Source	Allowable Emissions Before Reduction[1]	Actual Emissions[2]	
Boiler No. 1	70.00	49.50	49.50
		Adjusted allowable emissions (§607.C.3):	62.51
		Baseline emissions (§607.C.4):	49.50[3]
		Allowable emissions after reduction (§607.C.5):	0.00
		Surplus emission reduction (§607.C.6):	49.50
		Adjustments for netting (§607.D):	-0
		Total ERC:	**49.50**

[1] Permit 3120-00004-03 issued 7/10/97.
[2] Average of 2001 and 2002 actual emissions (§607.C.2).
[3] Baseline emissions shall be the lower of actual emissions or adjusted allowable emissions when the design value is not above the NAAQS for ozone (§607.C.4.a.ii).

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Louisiana promulgated a NO_X Reasonably Available Control Technology (RACT) rule (LAC 33:III.Chapter 22) on March 20, 2002. Beginning May 1, 2005, Chapter 22 required sources to reduce NO_X emissions during the five month ozone season, May 1 through September 30, inclusively. Typically, a stationary source reduces emissions below the baseline to generate surplus emission reduction credits. Due to the five month applicability of Chapter 22, the allowable emission limitation for a stationary source could potentially have two values, one for the five month ozone season, and another for the seven-month non-ozone season.

Thus, baseline emissions for a given stationary source, which are used to determine the surplus emission reduction (§607.C.6), could have two different values. In order to accurately determine the amount of ERC that can be used as offsets for nonattainment new source review (NNSR) permitting, baseline emissions and surplus ERC must be determined for the two time periods. Total NO_X ERC for any annual time period will consist of the ERC from the five month ozone season and the ERC from the seven month non-ozone season. Offset requirements for new sources derive from Section 173(a)(1)(A) of the Clean Air Act (CAA), which concerns "total" emissions and does not address the use of emission offsets for nonattainment permitting over periods of less than one year. Therefore, the NO_X ERC to be used in all NNSR permitting under LAC 33:III.504 must be determined by adding the ERC from the ozone season and the non-ozone season.

With respect to all offsets under Chapter 5 and all ERC under Chapter 6, the total NO_X emission increases during the ozone season must be offset by NO_X ERC from the ozone season. Non-ozone season NO_X increases may be met by either ozone or non-ozone NO_X ERC. The annual NO_X increase must be offset by the total combination of ozone and non-ozone season surplus NO_X emission reduction credits. See 67 FR 48093-48094 (July 23, 2002).

Ozone (O_3) season NO_x ERC:

Source	Allowable Emissions Before Reduction	Actual Emissions	
Boiler No. 1	29.34[4]	20.75	20.75
		Adjusted allowable emissions (§607.C.3):	21.85
		Baseline emissions (§607.C.4):	20.75
		Allowable emissions after reduction (§607.C.5):	0.00
		Surplus emission reduction (§607.C.6):	20.75
		Adjustments for netting (§607.D):	-0
		O_3 season ERC:	**20.75**

[4] 70.00 * 153/365

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Non-ozone (non-O_3) season NO_x ERC:

Source	Allowable Emissions Before Reduction	Actual Emissions	
Boiler No. 1	40.66[5]	28.75	28.75
		Adjusted allowable emissions (§607.C.3):	40.66
		Baseline emissions (§607.C.4):	28.75
		Allowable emissions after reduction (§607.C.5):	0.00
		Surplus emission reduction (§607.C.6):	28.75
		Adjustments for netting (§607.D):	-0
		Non-O_3 season ERC:	**28.75**

Total VOC ERC:

Source	Allowable Emissions Before Reduction[6]	Actual Emissions[7]	
Boiler No. 1	2.90	2.00	2.00
		Adjusted allowable emissions (§607.C.3):	2.90
		Baseline emissions (§607.C.4):	2.00
		Allowable emissions after reduction (§607.C.5):	0.00
		Surplus emission reduction (§607.C.6):	2.00
		Adjustments for netting (§607.D):	-0
		Total ERC:	**2.00**

Analysis of validity

Timeliness

Per §615.A, all applications for banking emission reductions shall be submitted by March 31 following the year in which the reductions occurred. Boiler No.1 was shut down on October 11, 2003. The application was dated March 31, 2004.[8]

Emissions reductions can be recognized as ERC only if they are determined to be surplus, permanent, quantifiable, and enforceable. Each criterion is addressed below.

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[5] 70.00 * 212/365.
[6] Permit 3120-00004-03 issued 7/10/97.
[7] Average of 2001 and 2002 actual emissions (§607.C.2).
[8] See EDMS Document No. 31455504.

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Surplus

Procedures for calculating the surplus emission reduction are outlined in §607.C & D.

1. The design value for the nonattainment area is below the 1-hour national ambient air quality standard (NAAQS) for ozone. Per §607.C.4.ii, if the design value for the nonattainment area is not above the 1-hour national ambient air quality standard (NAAQS) for ozone, the department shall compare the actual emissions with the adjusted allowable emissions in order to determine baseline emissions.

2. Calculate actual emissions during the baseline period. Actual emissions during the baseline period of 2001 and 2002 claimed in the Addis Plant Boiler No. 1 ERC Bank application were checked against the department's Emission Inventory database. NO_x and VOC emissions during the baseline period were calculated to be 49.50 and 2.00 TPY, respectively.

3. Calculate adjusted allowable emissions. Allowable emissions shall be adjusted to account for all new or revised federal or state regulations adopted that will require, or would have required, all or a portion of the emission reductions that comprise the ERC application. At the time of shutdown of Boiler No. 1, the DSM Copolymer Addis plant was operating under Permit No. 3120-00004-03 issued July 10, 1997. This permit was also in effect during the baseline period of 2001-2002. The permit required the plant to comply with the emission control regulations of 40 CFR 63, Subpart U, NESHAP: Group I Polymers and Resins. However, there are no Subpart U requirements applicable to Boiler No. 1. In addition, the boiler, which was constructed prior to 1984 and had not since been modified or reconstructed, was not subject to any federal New Source Performance Standard (NSPS). The department examined the federal regulations and found no new or modified requirements that would now be applicable to Boiler No.1.

   With regard to state regulations, there were no NO_x and VOC regulations applicable to a natural gas-fired boiler at the time of the reduction. However, LAC 33:III.Chapter 22 was promulgated on March 20, 2002, and had an effective date of May 1, 2005. §2201.D.1 sets NO_X emissions limits for stationary gas turbines and industrial boilers. Boiler No. 1 was shut down in 2003, and DSM would have had to install low NOx burners or other controls to meet the new NOx RACT regulations by the May 1, 2005 compliance date. Therefore, allowable NOx emissions during the 5-month ozone season have to be adjusted for compliance with the LAC 33:III.Chapter 22 standard of 0.10 pounds NOx/MM Btu for industrial boilers $\geq$ 80 MM Btu/hr. The heat input of 119 MM Btu/hr during the 2001 and 2002 ozone seasons was multiplied by the factor of 0.10 lb/MM Btu to calculate what would have been allowed beyond May 1, 2005. Adjusted allowable NOx emissions equal 21.85 tons for ozone season. For non-ozone season, since there are no new or revised NO_x regulations adopted since the baseline period that would have affected Boiler 1, adjusted allowable emissions for this period equal the permitted value. Total adjusted allowable NOx emissions for the baseline period are calculated to be 62.51 TPY (21.85 tons-O_3 season + 40.66 tons-non O_3 season).

   For VOC emissions, there are no new or revised federal or state regulations adopted since the baseline period that would have affected Boiler No. 1. Therefore, the emission limits contained in Permit No. 3120-00004-03 in effect at the time of the reduction also represent the "adjusted allowable emissions" as defined by §607.C.3. Adjusted allowable VOC emissions total 2.90 TPY.

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4. Quantify baseline emissions. Per §607.C.4.a.ii, if the design value is not above the NAAQS for ozone, baseline emissions shall be the lower of actual emissions (step 2 above) or adjusted allowable emissions determined in accordance with §607.C.3 (step 3 above). In this case, actual emissions are the limiting factors. Baseline emissions of NO_x and VOC total 49.50 TPY and 2.00 TPY, respectively.

5. Calculate allowable emissions after the reductions occurred. Boiler No. 1 was permanently shut down; thus, allowable emissions after the reduction are zero.

6. Calculate the surplus emission reduction by subtracting the allowable emissions after the reduction occurred from the baseline emissions.

   NO_x: 49.50 TPY – 0.00 TPY = 49.50 TPY
   VOC: 2.00 TPY – 0.00 TPY = 2.00 TPY

7. Finally, adjust for netting (§607.D). Emission reductions used in a netting analysis (i.e., to determine the *net emissions increase* as defined in LAC 33:III.504 or 509, as appropriate) that prevented the increase from being considered "significant" are not eligible for use as offsets. The quantity of emission reductions utilized to "net out" shall not be considered creditable. There is zero adjustment for netting, as the emission reductions were not used in a netting analysis.

   NO_x: 49.50 TPY – 0.00 TPY = 49.50 TPY
   VOC: 2.00 TPY – 0.00 TPY = 2.00 TPY

Permanent

The reductions are permanent because Boiler No. 1 was shut down on October 11, 2003, and subsequently demolished when the entire plant was shut down in January 2005. The plant wide air emissions permit was terminated on October 10, 2006.

Quantifiable

The emissions from Boiler No. 1 were calculated using approved EPA methods, EPA emission factors, and process data.

Enforceable

Finally, the reductions are enforceable because the Boiler No. 1 emission source was permanently shut down and removed from the site. The entire plant then ceased operation and the Addis plant-wide permit was terminated by the department.